

---

# TABLE OF CONTENTS

---

## ADVANCED DEGREES

### DOCTOR OF PHILOSOPHY

Efficient Nearly Orthogonal and Space-Filling Experimental Designs for High-Dimensional Complex Models.....	3
Variational Retrieval of Eastern Pacific Atmospheric Boundary Layer Parameters Using ATOVS With the COAMPS™ Mesoscale Forecast System.....	3
Randomized Ensemble Methods for Classification Trees .....	4
Enhancements and Extensions of Formal Models for Risk Assessment in Software Projects .....	4
An Agent Based Architecture for Generating Interactive Stories.....	5
Measurements and Observations of Interfacial Creep in Engineering Systems .....	5

### ELECTRICAL ENGINEER

Delay-Based Communication in Packet Switched Networks.....	7
Performance Analysis of a Digital Image Synthesizer as a Counter-Measure Against Inverse Synthetic Aperture Radar.....	7

## MASTER OF SCIENCE

### AERONAUTICAL ENGINEERING

A Computer Code for Rapid Calculation of Bending Frequencies of Rotor Blades .....	11
Design Recovery and Implementation of the AYK-14 VHSIC Processor Module with Field Programmable Gate Array Technology .....	11
Investigation of Detonation Wave Diffraction Interaction with Reactive Transpiration.....	12
Probabilistic Modeling and Simulation of Metal Fatigue Life Prediction.....	12
System Assessment of the F/A-18 C/D Avionics Architecture for Long Term Support and Future Growth .....	13
A Feasibility Study of Oscillating-Wing Power Generators.....	13
Development of a MYKLESTAD'S Rotor Blade Dynamic Analysis Code for Application to JANRAD ..	14
Flapping-Wing Propulsion as a Means of Drag Reduction for Light Sailplanes.....	14
A 3D Theodorsen-Based Rotor Blade Flutter Model Using Normal Modes.....	14
Strain Gauge Measurements of Blade Resonance Using Eddy Current Excitation in a Vacuum Spin Pit...	15
Development of the MATLAB-Based Michin Helicopter Aural Detection Model.....	15

### APPLIED MATHEMATICS

Gauge Integration .....	17
-------------------------	----

### APPLIED PHYSICS

Development of a Prototype Weapons Effectiveness Tool for Combined Arms Operations.....	19
---	----

### ASTRONAUTICAL ENGINEERING

A Framework for Designing Optimal Spacecraft Formations .....	21
Development and Control of the Naval Postgraduate School Planar Autonomous Docking Simulator.....	21

### COMPUTER SCIENCE

Generic Bluetooth Data Module.....	23
A Cognitive Task Analysis of Close Quarters Battle .....	23
Execution Level Java Software and Hardware for the NPS Autonomous Underwater Vehicle.....	24

---

# TABLE OF CONTENTS

---

Forward Observer Personal Computer Simulator (FOPCSIM) .....	24
A Method for Mitigating Distributed Denial of Service Attacks on Differentiated Services Networks .....	25
Visual Meta-Programming Language Graphical User Interface for Generative Programming .....	25
A Methodology for State and Transitional Analysis of the M1A2 ABRAMS Driver's Instrument Panel... ..	26
Reasoning by Analogy Using Holographic Conceptual Projection.....	26
Enhancement of Learning Process in Web-Based Courses Using Combined Media Components .....	27
An Event-Trace Language for Software Decoys .....	27
Integrated Theater Assessment Profiling System .....	28
Automatic Text Categorization Applied to E-mail.....	28
Delaying-Type Responses for Use by Software Decoys .....	28
A Rendering System Independent High Level Architecture Implementation for Networked Virtual Environments.....	29
A Peer Sharing Approach to Mission Planning and Development in U.S. Army Tactical Environments ...	29
A Novel Approach for the Simulation and Modeling of State-of-the-Art Multijunction Solar Cells.....	30
XML Based Adaptive IPSEC Policy Management in a Trust Management Context.....	30
Virtual Close Quarter Battle (CQB) Graphical Decision Trainer.....	31
Enterprise Implementations of Wireless Network Technologies at the Naval Postgraduate School and Other Military Educational Institutions .....	31
Achieving Last-Mile Broadband Access with Passive Optical Networking Technology .....	32
Semantic and Syntactic Object Correlation in the Object-Oriented Method for Interoperability.....	32
Telecommunications Technology and Service Changes After the Telecom Act of 1996 .....	33
Analysis and Prototyping of the United States Marine Corps Total Force Administration System (TFAS), Echelon II – A Web Enabled Database for the Small Unit Leader.....	33

## **CONTRACT MANAGEMENT**

Communicating Reengineering at Naval Facilities Engineering Command Southwest Division .....	35
--	----

## **ELECTRICAL ENGINEERING**

Design, Implementation, and Testing of an ASIC VLSI High Performance Arctangent Function.....	37
Coding-Spreading Tradeoff in CDMA Systems.....	37
Delay-Based Communication in Packet Switched Networks.....	38
Time Delay Estimation of a Wideband Source .....	38
Direct-Sequence Spread-Spectrum Modulation for Utility Packet Transmission in Underwater Acoustic Communication Networks.....	39
Quantifying the Differences in Low Probability of Intercept Radar Waveforms Using Quadrature Mirror Filtering .....	39
A Fixed-Point Phase Lock Loop in a Software Defined Radio .....	40
Bootstrap Based Signal Denoising .....	40
Performance of the IEEE 802.11a Wireless LAN Standard Over Frequency-Selective, Slow, Ricean Fading Channels.....	40
Performance Analysis of a Digital Image Synthesizer as a Counter-Measure Against Inverse Synthetic Aperture Radar.....	41
Electromagnetic Aircraft Launch System Technology Scaling for Unmanned Aerial Vehicle Launch Targeted Toward the Advanced Logistic Delivery System.....	41
A Novel Approach for the Simulation and Modeling of State-of-the-Art Multijunction Solar Cells.....	42
Smart Antenna Application in DS-CDMA Mobile Communication System .....	42
Comparison of Analytic and Numerical Models with Commercially Available Simulation Tools for the Prediction of Semiconductor Freeze-out and Exhaustion.....	43
Mobile User Objective System (MUOS) Helmet Mounted UHF Antenna Design and Human Body Effects.....	43

# TABLE OF CONTENTS

---

## **ENGINEERING SCIENCE**

Generic Bluetooth Data Module.....	45
------------------------------------	----

## **INFORMATION SYSTEMS AND OPERATIONS**

Impact of Public Perception on U.S. National Policy: A Study of Media Influence in Military and Government Decision Making.....	47
Democratic Influence Through Internet Usage in the People's Republic of China (U) .....	47

## **INFORMATION TECHNOLOGY MANAGEMENT**

Designing a Relational Database for the Basic School: School Command Web Enabled Officer and Enlisted Database (SWORD).....	49
Compliance with Established Department of the Navy Web Site Administration Policies and Procedures Regarding Publicly Accessible, Official United States Navy World Wide Web Sites.....	49
Communication During Complex Humanitarian Emergencies: Using Technology to Bridge the Gap .....	50
A Requirement Analysis for the Naval Postgraduate School's Alumni Database System .....	50
Windows XP Operating System Security Analysis.....	51
Integrated Theater Assessment Profiling System .....	51
Role of Electronic-Commerce in the Growth of Tunisian Economy.....	52
Analysis and Design of an Improved Sensor Formula for the Tactical Remote Sensor System (TRSS).....	52
Evaluation of Enterprise Application Integration (EAI) and Web Services at Fitting Out and Supply Support Assistance Center (FOSSAC) Under NMCI.....	53
A Surveillance Society and the Conflict State: Leveraging Ubiquitous Surveillance and Biometrics Technology to Improve Homeland Security .....	53
Influence Net Modeling: Hamas (U) .....	54
XML Based Adaptive IPSEC Policy Management in a Trust Management Context.....	54
Establishing a Beowulf Cluster for Password Recovery (U).....	55
Web Based Database Processing for Turkish Navy Officers in USA .....	55
An Integrated Intranet and Dynamic Database Application for the Security Manager at Naval Postgraduate School .....	55
Enterprise Implementations of Wireless Network Technologies at the Naval Postgraduate School and Other Military Educational Institutions .....	56
Information Technology (IT) Ethics: Training and Awareness Materials for the Department of the Navy .	56
Digital Video (DV): A Primer for Developing an Enterprise Video Strategy .....	57
Requirements for Digitized Aircraft Spotting (OUIJA) Board for Use on U.S. Navy Aircraft Carriers.....	57
U.S. Marine Specific Software Interoperability Requirements of the AFATDS and IOS Software Suites..	58
Leveraging Wireless Network Self Analysis to Improve Computer Network Defense (CND) .....	58
Exploitation of Existing Voice Over Internet Protocol Technology for Department of the Navy Application .....	59
Development of a Prototype Detailing Management System for the Civil Engineer Corps.....	59

## **LEADERSHIP AND HUMAN RESOURCE DEVELOPMENT**

Dimensions of Professional Ethics for the Modern United States Military.....	61
--	----

## **MANAGEMENT**

Measuring Success: Metrics that Link Supply Chain Management to Aircraft Readiness .....	63
An Analysis of Serial Number Tracking Automatic Identification Technology Used in Naval Aviation Programs .....	63
An Economic Analysis of Acquisition Opportunities for the United States Department of Defense Within the Japanese Defense Industrial Base .....	64
Analysis of General Accounting Office, Armed Services Board of Contract Appeals and Federal Court of Claims Decisions on Protests and Disputes Involving Performance Specifications .....	64

---

# TABLE OF CONTENTS

---

Enterprise Resource Planning (ERP): A Case Study of Space and Naval Warfare Systems Center San Diego's Project Cabrillo .....	65
--	----

## **MECHANICAL ENGINEERING**

Analysis of the Sensitivity of Multi-Stage Axial Compressors to Fouling at Various Stages .....	67
Experimental Studies of Welding Effects on Damping for Undersea Warfare Applications .....	67
Microstructure Characterization of Friction-Stir Processed Nickel-Aluminum Bronze Through Orientation Imaging Microscopy .....	68
Close-Proximity Vessel Towing in Six Degree-of-Freedom Motions in Short Crested Seas .....	68
Nanomechanics Model for Static Equilibrium .....	69
Study of Processing and Microstructure of a Superplastic 5083 Aluminum Alloy .....	69
Parameter Optimization of Seismic Isolator Models Using Recursive Block-by-Block Nonlinear Transient Structural Synthesis .....	69

## **METEOROLOGY**

The New Data Assimilation System at the Italian Air Force Weather Service: Design and Preliminary Results .....	71
--	----

## **METEOROLOGY AND PHYSICAL OCEANOGRAPHY**

Improving METOC Products and Services by Utilizing Net Centric Concepts .....	73
Hydrodynamics of Mine Impact Burial .....	73
Performance of a High Resolution Diagnostic Model for Short Range Mesoscale Wind Forecasts in Complex Terrain .....	74
A Numerical Study of the Forcing Mechanisms of the LEEUWIN Current System .....	74
Aerosol Optical Depth Retrieval with AVIRIS Data: A Test of TAFKAA .....	75
Meteorological and Model Traits Knowledge Bases for North Indian Ocean Tropical Cyclone Track Forecasting .....	75

## **MODELING, VIRTUAL ENVIRONMENTS AND SIMULATION (MOVES)**

An Analysis of Auditory Cues for Inclusion in a Virtual Close Quarters Combat Room Clearing Operation .....	77
An Audio Architecture Integrating Sound and Live Voice for Virtual Environments .....	77
Visual Field Requirements for Precision Nap-of-the-Earth Helicopter Flight .....	78
Implementing Realistic Helicopter Physics in 3D Game Environments .....	78
The Impact on Quality of Service When Using Security-Enabling Filters Provide for the Security of Run-Time Extensible Virtual Environments .....	79
The Impact of Emotional Arousal on Learning in Virtual Environments .....	79

## **OPERATIONS RESEARCH**

Sleep Patterns in U.S. Navy Recruits: An Assessment of the Impact of Changing Sleep Regimens .....	81
Analysis of OPLAN 5027 Dry Cargo Flow in Japan (U) .....	81
An Analysis of the Effects of Environment and Career Longevity on the Sleep Patterns of Enlisted U.S. Navy Submariners .....	82
A Comparison of the Operational Potential and Capability of Two Combat Logistics Force Alternatives .	82
Dynamic Allocation of Fires and Sensors .....	83
The Effectiveness of Corrective Actions Made to Reliability, Availability, Maintainability and Dependability Deficiencies of the Medium Tactical Vehicle Replacement .....	83
Differential Solutions Using Long-Range Dual-Frequency GPS Correction Data .....	84
An Analysis of Factors Predicting Success or Failure: United States Marine Corps Officer Candidates School .....	84

---

# TABLE OF CONTENTS

---

Multiple Additive Regression Trees: A Methodology for Predictive Data Mining for Fraud Detection .....	85
Enhancing the Situational Awareness of Airfield Local Controllers.....	85
The Effects of Reversing Sleep-Wake Cycles on Sleep and Fatigue on the Crew of <i>USS John C. Stennis</i> .	86
Optimal Allocation of Assault Support Aircraft in the Sustainment of Marine Corps Expeditionary Maneuver Warfare.....	86
Analysis of the Expeditionary Fire Support System Requirement .....	87
Optimal Aimpoints for Multiple GPS Weapons Released Against a Single Target.....	87
The Use of USCG Differential GPS Beyond Nominal Range .....	88
Spectral Analysis and Sonification of Simulation Data Generated in a Frequency Domain Experiment ....	88
An Analysis of Fuel Efficiency as a Key Performance Parameter for Military Aircraft Acquisitions .....	89

## **PHYSICAL OCEANOGRAPHY**

A Fine Resolution Model of the LEEUWIN Current System off Western and Southern Australia .....	91
Assessment of DELFT3D Morphodynamic Model During DUCK94 .....	91

## **PRODUCT DEVELOPMENT**

Knowledge Management in Naval Sea Systems Command: A Structure for Performance Driven Knowledge Management Initiative.....	93
Evolutionary Earned Value in Program Management, a Case Study: Tracking the Things that Matter .....	93
A Study of the Handling of Lessons Processing in Lessons Learned Systems and Application to Lessons Learned System Design.....	94
A Social Network Analysis of the National Materials Competency at Naval Air Systems Command .....	94
The Evolution and Application of Technical Risk Management Within the United States Navy .....	95

## **SOFTWARE ENGINEERING**

VHDL Modeling and Simulation for a Digital Target Imaging Architecture for Multiple Large Targets Generation .....	97
Analysis and Design of an Improved Sensor Formula for the Tactical Remote Sensor System (TRSS).....	97
Proposal to Develop Enhancements and Extensions of Formal Models for Risk Assessment in Software Projects.....	98
U.S. Marine Specific Software Interoperability Requirements of the AFATDS and IOS Software Suites..	98

## **SPACE SYSTEMS OPERATIONS**

Primary Space Education .....	99
Modeling the Propulsion Instrumentation Electronics Subsystem for Spacecraft-Environment Interactions on TECHSAT 21 .....	99
Human Disorientation as a Factor in Spacecraft Centrifuge Design .....	100
Remotely Sensed Density Measurements of Volcanic Sulfur Dioxide Plumes Using a Spectral Long Wave Infrared Imager .....	100
A Comparative Study of the Prospective Solar Cells for NPSAT1 .....	101
A Study of the Vulnerability of Commercial Imaging Satellites to Commercial Laser Technology (U)...	101
Analysis of the Aerodynamic Orbital Transfer Capabilities of a Winged Re-entry Vehicle.....	102
Timelines Requirements for SAM and Cruise Missile Launch Signature Cued Threat Warning (U).....	102
Feasibility of SCRAMJET Technology for an Intermediate Propulsive Stage of an Expendable Launch Vehicle.....	103
Overview and Vulnerability of Radio Determination Satellite Service (RDSS) Systems (U) .....	103
A Comparative Analysis of Radiation Effects on Silicon, Gallium Arsenide and GaInP <sub>2</sub> /GaAs/Ge Triple Junction Solar Cells Using a 30 MeV Electron Linear Accelerator .....	104

---

# TABLE OF CONTENTS

---

## **SYSTEMS ENGINEERING**

Analysis of Jammer Resistant, Spread Spectrum, VSAT Communication Scheme for Maritime Platform Using DS-CDMA .....	105
Mixed Signal Processor for a Robust Symmetrical Number System Direction Finding Antenna.....	105
VHDL Modeling and Simulation for a Digital Target Imaging Architecture for Multiple Large Targets Generation .....	106
Advanced Denial of Service Techniques in IEEE 802.11b Wireless Local Area Networks .....	106
Design of an Ultra-wideband Omni-directional Communications / Jammer Antenna for the Northrop-Grumman EA-6B Prowler Aircraft.....	107
Utilization of the EA-6B for Aircraft Carrier Anti-ship Missile Defense (ASMD) (U).....	107
Analysis of Low Probability of Intercept (LPI) Radar Signals Using the Wigner Distribution .....	108
Analysis of Low Probability of Intercept (LPI) Radar Signals Using Cyclostationary Processing.....	108
Exploiting IEEE 802.11B Wireless Local Area Network Signals from the EP-3E.....	109
IEEE 802.11 Wireless Local Area Network Security Through Location Authentication .....	109
Modeling a Networked Terrorist Organization with Situational Influence Assessment Module (U).....	109
Prototyping and Measurements of an Ultra-Wideband, Transmitter-Safe Antenna for the USQ-146 Installation on the H-60 Helicopter .....	110
Network Intruder Identification via Covert Data Exfiltration Using Location-Aware Code Embedded in a Benign Software Application.....	110
Vulnerability of WLANs to Interception.....	111
Detection and Classification of Low Probability of Intercept Radar Signals Using Parallel Filter Arrays and Higher Order Statistics.....	111
The Design and Architecture of 2 <sup>nd</sup> Generation Honeynets Using Network Deception.....	112
Performance Analysis of a CDMA VSAT System with Convolutional and Reed-Solomon Coding.....	112

## **SYSTEMS TECHNOLOGY**

Network Survivability Analysis of the Navy and Marine Corps Intranet (NMCI).....	113
Automated Assessment of Squadron Enlisted Manpower, Training, and Readiness .....	113
A Comparative Analysis of Information Systems and Command and Control Program Concepts to Support the Common Operating Picture.....	114
The Unique Requirements of Implementation and Adaptation of an Enterprise Resource System (ERP) within the Department of Defense (DoD): the Development of the Defense Integrated Military Human Resource System (DIMHRs).....	114

## **MASTER OF ARTS**

## **INTERNATIONAL SECURITY AND CIVIL MILITARY RELATIONS**

The Key Role of NATO Accession on Poland's Democratic Transition .....	117
--	-----

## **NATIONAL SECURITY AFFAIRS**

Effects of Humanitarian Aid: A Cuban Case Study .....	119
Post Unified Korean Foreign Policy Options: Regional Implications.....	119
Latin American Regional Cooperative Security: Civil-Military Relations and Economic Interdependence.....	120
Overcoming Ambivalence: The Case for Japanese Martial Internationalism .....	120
The U.S. Marine Corps, Industrial Entrepreneurship, and Victory in the Pacific, 1898-1945 .....	121
Cooperative Security in Northeast Asia: Ramifications of Change in the U.S. and ROK Maritime Strategies .....	121
Japan, Russia and the "Northern Territories" Dispute: Neighbors in Search of a Good Fence .....	122
The European Union's Headline Goal: An Operational Assessment .....	122
Terrorism and U.S. Counterterrorism in Southeast Asia .....	123

## TABLE OF CONTENTS

---

STUDENT INDEX.....	125
ADVISOR INDEX.....	129
INFORMATION ON OBTAINING AN NPS THESIS.....	133